

## **REMARKS**

### **INTRODUCTION**

In view of the following remarks, reconsideration of the allowability of the claims is respectfully requested.

Claims 1-18 are pending in the subject application.

### **FOREIGN PRIORITY**

It is respectfully noted that the Examiner has not yet acknowledged the Applicant's claim for foreign priority and submission of a certified copy of the foreign priority document, which were filed on May 8, 2000, with the present application. Applicant respectfully requests that the Examiner acknowledge the same.

### **REJECTION UNDER 35 USC 103**

Claims 1-3, 10 and 16-18 stand rejected under 35 USC § 103 as being obvious over Ravdin et al., U.S. Patent No. 5,862,304, in view of Smyth, U.S. Patent No. 5,465,321, and claims 4-9 and 11-15 stand rejected under 35 USC § 103 as being obvious over Ravdin et al. and Smyth, in view of Abrams et al., U.S. Patent No. 6,117,066. These rejections are respectfully traversed.

The outstanding rejections would appear to be primarily based on the obviousness of modifying Ravdin et al. to utilize a probability operation disclosed by Smyth.

Specifically, the Office Action would appear to be relying on Ravdin et al. to disclose a future malady of a patient based on the present conditions of the patient. More specifically, the Office Action recites: "[d]ata is evaluated to predict the future occurrence of the medical condition that has not yet occurred using a neural network to analyze the data...Once the neural network is trained, test data is used to predict the future occurrence of the disease or medical condition." See page 2 of the Office Action.

First, before further explaining the references, it is noted that this interpretation of a predicting of an abnormality regarding future system states is fundamentally different from the predicting described in the present application and claims. The independent claims, alone, and with clear inherent definitions installed from the specification, clearly are describing predicting the occurrence of an abnormal event not the derivation of a probability of a potential future event. The two are fundamentally different. The present application provides at least two

examples, where the actual occurrence of an event it predicted and preemptively thwarted. Conversely, the predicting discussed in Ravdin et al. is related to a general probability that such an event may occur, not the claimed actual prediction of the event or abnormality.

That being said, in rejecting independent claim 1, the Office Action continues to explain that Ravdin et al. fails to disclose the "information flow describing a predictability of plural future system states," which the Office Action relies on Smyth to disclose.

Specifically, the Office Action sets forth that Smyth "teaches future state prediction using evaluation of a temporal, hierarchical pattern of information flow for the purpose of predicting future outcomes, hence enabling robust decision making." Thereafter, the Office Action further sets forth that it would have been obvious to modify Ravdin et al. to include such a state prediction operation "for the purpose of predicting future outcomes in the Ravdin et al. system in order to continuously utilize the monitored data to increase the speed and accuracy of predicted future states."

However, conversely to the interpretation of the Office Action, it is respectfully submitted that the prediction system disclosed in Smyth is a bit different from that interpreted by the Office Action, and based on a more thorough review of Smyth it will be come more clear that the system of Smyth would not have been an obvious incorporation into Ravdin et al., for these aforementioned motivational reasons.

Smyth sets forth a backward looking fault/abnormality predicting system. More specifically, Smyth sets forth monitoring in a present time for the occurrence of fault or abnormalities based on past predicted fault or abnormality occurrences. See Smyth in col. 19, lines 42-50, "Finally, the method is completed by computing from the intermediate probability for each one of the states of the current sampling interval the posterior probability that the system is in the corresponding one of the states, and determining from the posterior probabilities whether the system has transition to one of the failure states and, if the system has transitioned to one of the failure states, issuing an alarm corresponding thereto."

Although Smyth may utilize monitored data to increase the speed and accuracy for predicting faults or abnormalities, and may utilize a temporal, hierarchical pattern of information for the purpose of predicting faults or abnormalities, thereby enabling robust decision making, the predicting of faults and abnormalities is completely different from the aforementioned predicting of a potential malady of a patient disclosed in Ravdin et al.

In a generic example, Smyth discusses the predicting system in the area of electrical fault detection. In that example, the predicting system merely predicts the present occurrence of a fault based on a present probability and previous calculated probabilities. If t1-t5 were past sampling times, there would have been a calculated probability of fault for each time "t," and a current fault prediction at time t6 would be based present time t6 conditions and on the previous calculated probabilities at times t1-t5.

Thus, Smyth would appear to be directed to the monitoring of a dynamic system for the actual occurrence of an abnormality, which is also quite different from the present invention, which is more directed to predicting a future occurrence of the abnormality (or fault using the above example) to use that information to prevent the actual occurrence thereof. The driving forces behind both applications are fundamentally different. The Smyth system is more concerned with an accurate detection of an occurring event, while the present invention is more concerned with an accurate prediction of a future event to prevent the occurrence of the same. These differences between Smyth and the presently claimed invention will be more thoroughly discussed below after the concluding of this discussion of the obviousness of modifying Ravdin et al. in view of Smyth.

As noted above, Ravdin et al. sets forth a system for detecting the probability of a patient developing different maladies based on past measurement data of the patient. The Office Action sets forth that it would have been obvious to modify Ravdin et al. to include the predicting system of Smyth "for the purpose of predicting future outcomes in the Ravdin et al. system in order to continuously utilize the monitored data to increase the speed and accuracy of predicted future states."

However, Smyth would appear to essentially disclose an improved present abnormality occurrence detection system, which of course is based on present and past abnormality occurrence predictions.

The Smyth system is directed to the detection of a present occurrence of an abnormality while Ravdin et al. is directed to predicting the possibility of the occurrence of the abnormality.

There would have been not have motivation for incorporating the Smyth system into Ravdin et al., as Ravdin et al. would not appear to be interested in the actual present occurrence of the abnormality. Even the Office Action makes note that "[t]he data processing [of Ravdin et al.] utilizes a neural network to predict the future occurrence of non-existent medical conditions" (Emphasis added).

Thus, the two predicting systems are incompatible.

Further, as noted above, Ravdin et al. is more directed to the generating of a probability of a future occurrence of an abnormality, while Smyth is more directed to basing the actual detection of the occurrence or abnormality on present probability calculations.

Although the system of Smyth may have benefits over similar systems, such benefits are not relevant to the system of Ravdin et al., as Ravdin et al. would utilize a totally different predicting system.

Therefore, for at least the above, it is respectfully submitted that there would not have been motivation for modifying Ravdin et al. to include the predicting system of Smyth. In addition, it is respectfully submitted that if such a predicting system were incorporated into Ravdin et al. then Ravdin et al. may not work as intended, e.g., as a diagnostic device of future maladies for preemptive medical treatment.

In addition to there not being motivation for modifying Ravdin et al. to include the predicting system of Smyth, it is respectfully submitted that the Office Action may have misinterpreted the claimed "information flow."

Although it is acknowledge that Smyth does recite "information flow" in the abstract, "...[i]n this hierarchical pattern of information flow....," the use therein is not the same as the presently claimed "information flow."

"Information flow" is not simply the movement of data from one place to another. As defined in the specification and in the previous responses, information flow must meet the described concept of "the information flow of a system [describing] a development of a predictability of plural future system states." See the previous response and previous amendment to the independent claims. Information flow describes the extent to which states of the system are predictable, and information flow can be obtained by comparing test data relating to possible results, from a subject/system not under examination, with comparison data relating to the subject/system under examination.

In addition, paragraph 2 of the specification provides citations to references authored by the inventor, Mr. Deco, and others. These references describe "information flow." The Examiner is requested to consult the cited references if there are any questions regarding of the term. If the Examiner requires additional copies of the references, the Examiner is requested to telephone the undersigned.

As an example, the background of the present specification points out that "information flow ... characterizes a loss of information in a dynamic system and describes 'decaying statistical dependencies' between the entire past and a point in time that lies  $p$  steps in the future as a function of  $p$ . Among other things, the utility of such an information flow is that a ***dynamic behavior of a complex system can be classified***, allowing a suitable parameterized model to be found that enables a modeling of data of the complex dynamic system."

Thus, the claimed information flow is at least a characterization of a dynamic behavior (including statistical dependencies between past and future points in time) of a complex system. Neither Ravdin et al. nor Smyth disclose such a claimed information flow.

Briefly, it is noted that when an application, or a response, provide definitions of claim terms pointing out the differences between the cited references and the pending claims such definitions should, therefore, be used in interpreting such claim terms, i.e., the broadest interpretation of the claim term would not be applicable, but rather the interpretation must be the broadest interpretation in view of the proffered definition. For support see: *Honeywell Inc. v. Victor Co. of Japan Ltd.*, 63 USPQ2d 1904 (CA FC 2002); *Mycogen Plant Science v. Monsanto Co.*, 243 F.3d 1316, 1327, 58 USPQ2d 1030, 1039 (Fed. Cir. 2001); *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576, 34 USPQ2d 1673, 1677 (Fed. Cir. 1995); See *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582, 39 USPQ2d 1573, 1577 (Fed. Cir. 1996) ('[T]he record before the Patent and Trademark Office is often of critical significance in determining the meaning of the claims.');

*E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1438, 7 USPQ2d 1129, 1135 (Fed. Cir. 1988).

Thus, at least as the aforementioned definitions of "information flow" have been proffered, and as neither Ravdin et al. nor Smyth disclose the same, it is respectfully submitted that such references fail to suggest or disclose, alone or in combination, the presently claimed invention.

Therefore, for at least the above, it is respectfully requested that the rejection of the independent claims be withdrawn and the independent claims be allowed. In addition, for at least similar rationale, it is respectfully submitted claims depending from the independent claims are also in proper condition for allowance.

CONCLUSION

There being no further objections or rejections, it is submitted that the application is in condition for allowance, which action is courteously requested.

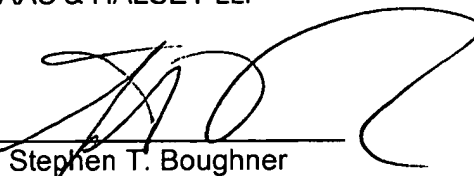
Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 9/10/03

By:   
Stephen T. Boughner  
Registration No. 45,317

1201 New York Avenue, N.W., Suite 700  
Washington, D.C. 20005  
(202) 434-1500